REMARKS

Claims 20-25 were examined. No claims are amended. Claims 20-25 remain in the Application.

The Patent Office rejects claims 20-25 under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 5,082,517 of Moslehi (Moslehi) in view of "Role of N_2 addition on CF_4/O_2 remote plasma chemical dry etching of polycrystalline silicon," Matsuo et al. (Matsuo).

With respect to claim 20, the Patent Office relies on Moslehi for teaching a machine readable storage medium containing executable program instructions which when executed cause a digital processing system to perform a method of reacting a plasma with a substrate, the method comprising generating a plasma from nitrogen comprising radicals and ions in a first chamber and transferring the plasma radicals into a second chamber. The Patent Office relies on Matsuo for teaching that the plasma radicals are transferred via a distance equivalent to a lifetime of the nitrogen ions such that the plasma is in the second chamber substantially free of nitrogen ions.

With respect to the transferring the plasma radicals via a distance equivalent to a lifetime of the nitrogen ions, the Patent Office relies on Matsuo's discussion of Figure 4. According to the Patent Office,

> Matsuo's operation . . . is not completely clear in anticipation that Matsuo's operation can provide a separation between chambers such that the separation is equivalent to the lifetime of the nitrogen ions at a plasma generation rate such that the radicals react with the substrate.
>
> However, Matsuo states that the separation distance plays a major role in which reactive species survive and reach the processing chamber (Section III.B.2, page 1803, second sentence) under the variable conditions of flow control ("Mass Flow Controllers"; Figure 1) and microwave power (Section II - Experimental).

Office Action, page 6.

In numerous responses filed previously, Applicants have detailed the teachings of Matsuo regarding tube length. It is clear that in Matsuo, where nitrogen is added to an etch chemistry such as CF_4 or CF_4/O_2, the etch rate decreases with tube length in any of the three embodiments shown in Figure 4. The only conclusion to be drawn from this is that where nitrogen is added in an etching environment that there should be minimal or no separation between an applicator and an etch chamber so that, presumably, both ions and radicals can react to the substrate. Applicants believe that it is inappropriate to conclude that based on the teachings of Matsuo there would be any benefit from separating an applicator and an etch chamber. In other words, for each of a pure CF_4 or CF_4/O_2 etch chemistry, an etch rate is increased by almost a factor of two for zero tube length than rapidly decreases as the applicator is separated from the etch chamber. The fact that a slight separation does not immediately decrease the etch rate is not a motivation to increase the tube length as suggested by the Patent Office. The Patent Office must read the teachings of Matsuo in their entirety.

Moslehi teaches preferably introducing both charge and neutral species into a processing chamber. Matsuo teaches that, where a nitrogen is introduced, zero tube length separation between an applicator and an etch chamber is that, implying that nitrogen ions will be present in the etch chamber. Therefore, the combined teachings of Moslehi and Matsuo are that, where nitrogen is involved, preferably both ions and radicals are introduced into a processing chamber. This is contrary to the teachings of claims 20-25.

Applicants respectfully request that the Patent Office withdraw the rejection to claims 20-25 under 35 U.S.C. §103(a).

CONCLUSION

In view of the foregoing, it is believed that all claims now pending patentably define the subject invention over the prior art of record and are in condition for allowance and such action is earnestly solicited at the earliest possible date.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,

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CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below to the United States Patent and Trademark Office.

Nedy Calderon 9/29/06

Nedy Calderon Date